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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/721,609

11/24/2003

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05/23/2008

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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

05/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/721,609

Applicant(s)

NISHIGUCHI ET AL.

Examiner

Jimmy Lin

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (U.S. Publication No. 2002/0001026) in view of Ono et al. (JP 2000-289320) and George et al. (U.S. Patent No. 4,487,122).

Ishikawa teaches a method of producing an organic electroluminescence device comprising a pair of electrodes [0013]. Layers of organic material are disposed between the electrodes so as to cause luminescence between the electrodes [0013]. Ishikawa further teaches that in each ink application, a coating liquid (formed by dissolving an organic EL material with a solvent [0037]) is placed and filled into an intaglio plate 402 and a silicone rubber blanket 407 is pressed onto the plate 402 giving a blanket pressing depth to receive an ink pattern 408 (Fig. 4A). The ink pattern is then transferred as an ink pattern on a substrate ([0050]; Fig. 4B).

Ishikawa does not explicitly teach that the coating liquid is supplied and applied from the lower side. However, Ono teaches that ink 10 can be supplied and applied to the surface of the silicone blanket 9 from the lower side via a gravure roll provided with a gravure pattern (drawing 3). Also, letterpress (i.e. relief printing plate) may be used instead of the intaglio plate [0007]. Because Ono teaches that such methods were operable for forming a pattern on a silicon blanket, it would have been obvious to one of ordinary skill in the art at the time of the invention to have supplied and applied the intaglio printing process of Ono to print the EL layers of Ishikawa.

Ono does not explicitly teach that the gravure roll has edges tapered in the axial direction at both ends. However, George teaches that it was well known to have used a gravure roll 14 having rounded edges (Fig. 1). By definition, a taper is a gradual reduction of size toward one end. A rounded edge of a cylinder tapers towards the axial direction of the cylinder. Because

George teaches that such gravure rolls were operable, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a gravure roll having rounded edges as the particular gravure roll of Ono with a reasonable expectation of success.

Ono does not explicitly teach that the coating liquid is formed with substantially the same thickness throughout a pixel-forming area on the silicon blanket. However, Ishikawa teaches the need for the organic layer to have a uniform thickness [0015]. One of ordinary skill in the art would have recognized that a layer of uniform thickness on the silicon blanket would have produced a layer of uniform thickness on the electroluminescent substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a uniform thickness of the coating liquid of Ishikawa on the silicon blanket with a reasonable expectation of success in order to have formed an organic layer having a uniform thickness on the electroluminescent substrate.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa '026 in view of Ono '320.

Ishikawa teaches a method of producing an organic electroluminescence device comprising a pair of electrodes [0013]. Layers of organic material are disposed between the electrodes so as to cause luminescence between the electrodes [0013]. Ishikawa further teaches that in each ink application, an ink (formed by dissolving an organic EL material with a solvent [0037]) is placed and filled into an intaglio plate 402 and a silicone rubber blanket 407 is pressed onto the plate 402 giving a blanket pressing depth to receive an ink pattern 408 (Fig. 4A). The ink pattern is then transferred as an ink pattern on a substrate ([0050]; Fig. 4B).

Ishikawa does not explicitly teach that ink is supplied onto the silicon blanket via a slit formed by two flat plates. However, Ono teaches that ink 10 can be supplied and applied to the surface of the silicone blanket 9 from the lower side via a die coater having a slit 15 (drawing 2). Also, letterpress (i.e. relief printing plate) may be used instead of the intaglio plate [0007]. Because Ono teaches that such methods were operable for forming a pattern on a silicon blanket, it would have been obvious to one of ordinary skill in the art at the time of the invention to have supplied and applied the intaglio printing process of Ono to print the EL layers of Ishikawa.

Ono does not explicitly teach that the die coater has slanted surfaces with a downward gradient from the central portion side toward the end portion sides of the rotational axis of the silicon blanket. However, rounded edges formed on the plates of the die coater would have reduced sharp edges. Handling of an object having sharp edges could potentially cause injury. Rounded edges on the plates would form a slanted surface with a downward gradient. It would have been obvious to one of ordinary skill in the art at the time of invention to have formed rounded edges on the plates of the die coater of Ono with a reasonable expectation of success. One would have been motivated to do so in order to have reduced potential injury when handling the die coater.

Claim 4: Ono does not explicitly teach that the gaps between the left and right end portions of the flat plates of the die-coater are closed. However, the die-coater is only meant to extrude the coating liquid from the upper portions of the flat plates and not from the gaps on the left and right end portions. One of ordinary skill in the art would have recognized that closing off the gaps on the side portions would have further prevented the coating solution to leak out of the ends and to further control the extrusion from the die-coater. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have closed the gaps between the left and right end portions of the flat plates of the die-coater of Ono with a reasonable expectation of success. One would have been motivated to do so in order to have prevented coating solution from flowing out of gaps and to have further controlled the rate at which the coating solution coats the silicon blanket.

Ono does not explicitly teach that the spacing between the surface of the blanket and the top face of the die coater is uniform at a slit portion corresponding to an effective pixel forming area of the silicon blanket. However, Ishikawa does suggest the organic layer has uniform thickness [0015]. It is apparent that the spacing between the die coater and the silicon blanket controls the thickness of the layer and that a uniform spacing would result in a uniform layer thickness. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have had a uniform spacing between the die coater of Ono and the silicon blanket with a reasonable expectation of success in order to have formed an organic layer having a uniform thickness.

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4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa '026 in view of Ono '320 as applied to claim 3 above, and further in view of Suga et al. (U.S. Patent No. 5,853,801).

Claim 5: Ono does not explicitly teach that the upper half portions of gaps between the left and right end portions of the flat plates are open and that the lower half portions of the gaps are closed. However, Suga teaches that it was well known to have used a die-coater 35 having upper half portions of the gaps opened and the lower half portions of the gaps closed (Fig. 3). Because Suga teaches that such die-coater structures were operable, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a die-coater having a structure as taught in Suga in the coating method of Ono with a reasonable expectation of success.

Response to Arguments

5. Applicant's arguments filed 3/11/2008 have been fully considered but they are not persuasive.

Applicant argues on pg. 6 that Ishikawa and Ono fail to disclose a gravure roll tapered in the axial directions at both ends. However, George teaches that gravure rolls having rounded edges were well known. By definition, a taper is a gradual reduction of size toward one end. A rounded edge of a cylinder tapers towards the axial direction of the cylinder. The teachings of George have been added to the rejection to address the newly added limitations.

Applicant argues on pg. 7 that Ishikawa and Ono fail to disclose that the top faces of two flat plates being slant surfaces with a downward gradient from the central portion side toward the end portion sides of the rotational axis of a silicone blanket. However, rounded edges formed on the plates of the die coater would have reduced sharp edges. Handling of an object having sharp edges could potentially cause injury. Rounded edges on the plates would form a slanted surface with a downward gradient. This new grounds of rejection has been added to the rejection to address the newly added limitations.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is (571)272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jimmy Lin/
Examiner, Art Unit 1792

Art Unit: 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit
1792